Claims:

1. A substrate spin rinse dry cell, comprising:

a cell body defining an interior processing volume;

rotatable substrate support member positioned in the processing volume, the rotatable substrate support member comprising:

a rotatable flywheel having a plurality of upstanding substrate support members extending therefrom; and

a fixed central hub member positioned radially inward of the plurality of upstanding substrate engaging members, the central member having a plurality of backside fluid dispensing nozzles and at least one backside gas dispensing nozzle positioned thereon; and

at least one frontside fluid dispensing nozzle positioned to dispense a rinsing fluid onto an upper surface of a substrate supported by the substrate support members.

2. The spin rinse dry cell of claim 1, wherein each of the plurality of upstanding substrate support members comprise:

a pivotally mounted substrate engaging finger member; and

a fixedly mounted substrate support post member positioned in a channel formed into an inwardly facing surface of the substrate engaging finger member.

3. The spin rinse dry cell of claim 2, wherein the substrate engaging finger member further comprises a rounded leading edge having a first thickness and a tapering trailing edge portion having a second thickness, wherein the first thickness is greater than the second thickness.

4. The spin rinse dry cell of claim 2, wherein the substrate engaging finger member further comprises a horizontally positioned substrate engaging notch positioned proximate an upper terminating end of the finger member.

5. The spin rinse dry cell of claim 2, wherein the support post member further comprises a substantially horizontal substrate support surface having an angled substrate guide surface positioned radially outward of the substrate support surface.

6. The spin rinse dry cell of claim 2, wherein the pivotally mounted upstanding substrate engaging members are pivotally actuated via vertical movement of a shield member positioned in a lower portion of the spin rinse dry cell.

7. The spin rinse dry cell of claim 6, wherein the pivotally mounted substrate engaging finger members are configured to be actuated between an open position where a substrate may be loaded onto the support post members and a closed position where a bevel edge of the substrate is engaged by a horizontal channel formed into an inwardly facing surface of the finger member.

8. The spin rinse dry cell of claim 1, wherein the central hub member is rotatably fixed with respect to the rotatable substrate support member.

9. The spin rinse dry cell of claim 8, further comprising a at least two flow circulation breaker members attached to the central hub member and extending radially outward therefrom.

10. The spin rinse dry cell of claim 9, wherein the circulation breaker members are positioned to float above the substrate support member.

11. The spin rinse dry cell of claim 10, wherein the circulation breaker members are shaped with a tapered leading edge.

12. The spin rinse dry cell of claim 9, wherein the circulation breakers are sized and shaped to minimize formation of low pressure above the hub member during substrate rotation.

13. The spin rinse dry cell of claim 1, further comprising a substrate sensing assembly positioned outside the cell body.

14. The spin rinse dry cell of claim 13, wherein the substrate sending assembly comprises at least one light emitter and at least one light detector, the emitter being positioned to emit an optical signal parallel to and just above the surface of a substrate that is properly positioned in the spin rinse dry cell and the detector being positioned to receive the optical signal.

15. The spin rinse dry cell of claim 14, wherein the detector and emitter are positioned to determine presence and the planarity of the substrate relative to the substrate support members.

16. A substrate rinsing cell, comprising:

a rotatable flywheel having a plurality of substrate engaging finger assemblies extending therefrom, each of the plurality of finger assemblies having an outer pivotally mounted substrate engaging member and an inner fixed substrate supporting member;

at least one backside fluid dispensing nozzle positioned to dispense a rinsing fluid onto a backside of a; and

at least one frontside fluid nozzle positioned to dispense a rinsing fluid onto a frontside of the substrate positioned in a central opening at the flywheel.

17. The substrate rinsing cell of claim 16, further comprising at least one gas dispensing nozzle positioned to dispense a drying gas onto at least one of the frontside and the backside of the substrate.

18. The substrate rinsing cell of claim 16, wherein the plurality of finger assemblies comprise a rounded leading edge and a tapering trailing edge.

19. The substrate rinsing cell of claim 18, wherein the leading edge of the finger assemblies has a first diameter and the trailing edge of the finger assemblies has a second diameter, the first diameter being larger than the second diameter.

20. The substrate rinsing cell of claim 18, further comprising a horizontally positioned substrate engaging notch positioned proximate an upper terminating end of the finger assembly on an inwardly facing surface thereof.

21. The substrate rinsing cell of claim 16, wherein the outer pivotally mounted substrate engaging member is pivotally actuatable between a substrate loading position and a substrate processing position.

22. The substrate rinsing cell of claim 21, wherein the pivotally mounted substrate engaging member is pivotally actuated via vertical movement of a basin shield member positioned in a lower portion of the substrate rinsing cell.

23. The substrate rinsing cell of claim 16, wherein the fixed substrate support member comprises a post having an upper substantially horizontal substrate supporting surface and an inclined substrate centering surface positioned radially outward of the substrate supporting surface.

24. The substrate rinsing cell of claim 16, wherein the substrate engaging member has a vertical channel formed into an interior surface thereof, and the fixed substrate engaging member being positioned in the vertical channel.

25. The substrate rinsing cell of claim 16, further comprising a plurality of flow circulation breaker members positioned on a central fixed portion of the rotatable flywheel.

26. The substrate rinsing cell of claim 25, wherein the circulation breaker members comprise an elongated member extending radially outward from the central fixed member and extending upward from the flywheel toward the substrate.

27. The substrate rinsing cell of claim 26, wherein the circulation breaker members are float above the flywheel and are fixed to the central hub.

28. The spin rinse dry cell of claim 26, wherein the at least one circulation breaker is fabricated from at least one of a polymeric material, a plastic and polyetherimide.

29. The spin rinse dry cell of claim 26, wherein the at least one circulation breaker defines two fins extending radially from the hub in substantially opposite directions.

30. The substrate rinsing cell of claim 16, further comprising a substrate presence and planarity sensor.

31. The substrate rinsing cell of claim 30, wherein the sensor comprises an optical emitter and an optical detector, the emitter and detector being positioned to emit an optical signal through a plane of the substrate to determine the presence of the substrate and in a path parallel and proximate to a surface of the substrate to determine planarity of the substrate.

32. The substrate rinsing cell of claim 31, wherein the emitter and detector are positioned outside of a cell body containing the flywheel.

33. A method for rinsing and drying a substrate, comprising:

positioning the substrate on a plurality of post members;

pivoting a plurality of substrate engaging fingers radially inward to engage a bevel edge of the substrate;

dispensing a rinsing fluid onto at least one of a frontside and a backside of the substrate while rotating the substrate at a first rotation speed to rinse the substrate for a first period of time; and

rotating the substrate at a second rotation speed to dry the substrate for a second period of time, wherein the second rotation speed is greater than the first rotation speed.

34. The method of claim 33, further comprising dispensing a drying gas onto the substrate during the rotation at the second rotation speed.

35. The method of claim 33, wherein positioning the substrate on the plurality of fixed post members further comprises centering the substrate via slidable engagement between the substrate and an upwardly inclined surface positioned on an outer portion of the fixed post members.

36. The method of claim 33, wherein pivoting the fingers further comprises pivoting an airfoil shaped substrate engaging member inwardly to engage the substrate at a bevel edge portion thereof with a horizontally oriented notch formed into an inwardly facing surface of the airfoil member.

37. The method of claim 33, wherein rotating at the first rotation speed and the second rotation speed comprises rotating the substrate engaging fingers.

38. The method of claim 33, further comprising sensing the presence of the substrate after the pivoting step.

39. The method of claim 33, further comprising sensing the planarity of the substrate after the pivoting step.

40. The method of claim 33, further comprising reducing a low pressure region below the substrate by positioning at least one flow circulation breaker on a hub assembly below the substrate.

41. A spin rinse dry cell, comprising:

a rotatable flywheel assembly positioned in a cell body;

a stationary hub member positioned centrally in the flywheel;

a horizontal shield extending radially outward from the hub member over an upper surface of the flywheel; and

a vertical shield member positioned adjacent and parallel to a vertical side portion of the flywheel.

42. The spin rinse dry cell of claim 41, wherein the horizontal shield is positioned between about 1mm and about 5mm above the upper surface of the flywheel.

43. The spin rinse dry cell of claim 41, wherein the vertical shield comprises an annular member positioned radially outward of a perimeter of the flywheel, the annular member being positioned between about 1mm and about 5mm from the perimeter.